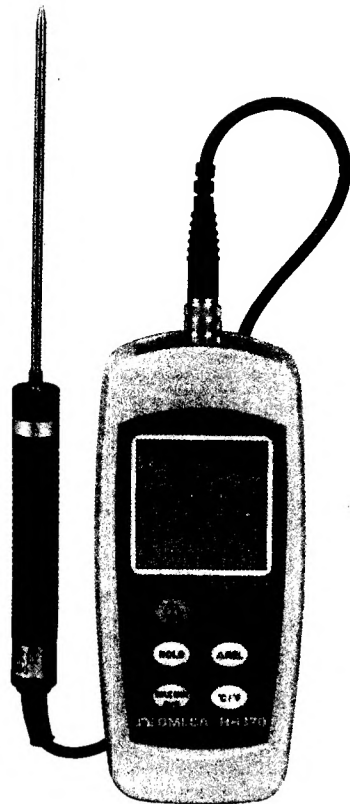




User's Guide



Shop online at

**omega.com\***

\*OMEGA\*

omega.com

e-mail: [info@omega.com](mailto:info@omega.com)

For latest product manuals:

[omegamanual.info](http://omegamanual.info)



# HH370 RTD Thermometer

**omega.com**

OMEGA

OMEGAnet® On-Line Service  
omega.com

Internet e-mail  
info@omega.com

### Servicing North America:

**U.S.A.: ISO 9001 Certified**  
One Omega Drive, Box 4047  
Stamford, CT 06907-0047  
Tel: (203) 359-1660  
FAX: (203) 359-7700  
e-mail: info@omega.com

**Canada:**  
976 Berger  
Laval (Quebec) H7L 5A1, Canada  
Tel: (514) 856-6928  
FAX: (514) 856-6886  
e-mail: info@omega.ca

### For immediate technical or application assistance:

**U.S.A. and Canada:**  
Sales Service: 1-800-826-6342 / 1-800-TC-OMEGA\*  
Customer Service: 1-800-622-2378 / 1-800-622-BEST\*  
Engineering Service: 1-800-872-9436 / 1-800-USA-WHEN\*

**Mexico:**  
En Español: (001) 203-359-7803  
FAX: (001) 203-359-7807  
e-mail: espanol@omega.com  
info@omega.com.mx

### Servicing Europe:

**Czech Republic:**  
Frystatska 184, 733 01 Karviná, Czech Republic  
Tel: +420 (0)59 6311899  
FAX: +420 (0)59 6311114  
Toll Free: 0800-1-66342  
e-mail: info@omegashop.cz

**Germany/Austria:**  
Daimlerstrasse 26, D-75392  
Deckenpfronn, Germany  
Tel: +49 (0)7056 9398-0  
FAX: +49 (0)7056 9398-29  
Toll Free in Germany: 0800 639 7678  
e-mail: info@omega.de

**United Kingdom:**  
**ISO 9002 Certified**  
One Omega Drive  
River Bend Technology Centre  
Northbank, Irlam  
Manchester M44 5BD  
United Kingdom  
Tel: +44 (0)161 777 6611  
FAX: +44 (0)161 777 6622  
Toll Free in United Kingdom:  
0800-488-488  
e-mail: sales@omega.co.uk

It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.  
The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.  
**WARNING:** These products are not designed for use in, and should not be used for, human applications.

# CONTENTS

<i>TITLE</i>	<i>PAGE</i>
<b>1. Introduction.....</b>	<b>1</b>
<b>2. Specifications.....</b>	<b>1</b>
<b>3. Symbol Definition and Button Location.....</b>	<b>3</b>
<b>4. Operation Instructions.....</b>	<b>5</b>
4.1 Power-Up.....	5
4.2 Connection the Temperature Scale.....	5
4.3 Selecting the Temperature Scale.....	5
4.4 Data-Hold Operation.....	5
4.5 Back light Operation.....	5
4.6 Relative Operation.....	6
4.7 MAX/MIN/AVG Operation.....	6
4.8 Auto Power Off.....	6
4.9 Low Battery Condition.....	7
<b>5. Temperature Measurement.....</b>	<b>7</b>
<b>6. Temperature Meter Calibration Setup.....</b>	<b>8</b>
<b>7. Maintenance.....</b>	<b>13</b>
Replacing the Batteries.....	13
Cleaning.....	14
<b>8. Temperature Probe.....</b>	<b>15</b>

**1. Introduction:**

This instrument is a digital thermometer for use with platinum-type temperature sensor.

Temperature indication follows IEC751 temperature table for PT-type sensor.

**2. Specifications:**

**Numerical Display:** 4 digital liquid crystal display

**Measurement Range:** -100°C ~ 300°C; -148°F ~ 572°F

**Resolution:** 0.1°C; 0.1°F;

**Sensor types:**

Platinum resistance temperature sensor for pt-100, pt-1000 (selectable) 4 wires.

ALPHA=0.003850

**Measurement current:** Approx 0.53mA

**Maximum Voltage at Temperature couple Input:**

60V DC, or 24Vrms AC

**Environmental:**

☐ Operating Temperature and Humidity:  
0°C ~ 50°C (32°F ~ 122°F) ; 0 ~ 80% RH

☐ Storage Temperature and Humidity:  
-10°C to 60°C (14°F ~ 140°F); 0 ~ 80% RH

☐ Altitude, up to 2000 meters.

**Accuracy:** at ( 23 ± 5°C )

Range	Accuracy
-100°C ~ 300°C	±(0.1% reading + 0.4°C)
-148°F ~ 572°F	±(0.1% reading + 0.8°F)

**Temperature Coefficient:**

For ambient temperatures from 0°C ~ 18°C and 28°C ~ 50°C, for each °C ambient below 18°C or above 28°C add the following tolerance into the accuracy spec.

0.01% of reading + 0.03°C ( 0.01% of reading + 0.06°F )

**Note:**

*The basic accuracy Specification does not include the error of the probe please refer to the probe accuracy specification for additional details.*

**Sample Rate:** 2 times per second

**Water resistance:** IP67

**Dimension:** 150 x 66 x 31mm

**Weight:** 175g Approx.

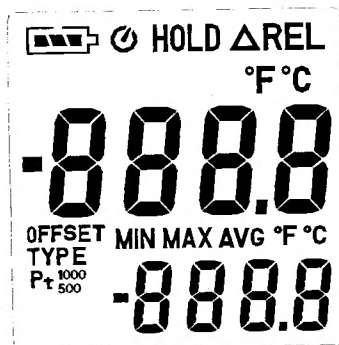
**Accessory:** Pt-100 Probe(class A), Battery, Instruction Menu

**Option:** Connection Cable

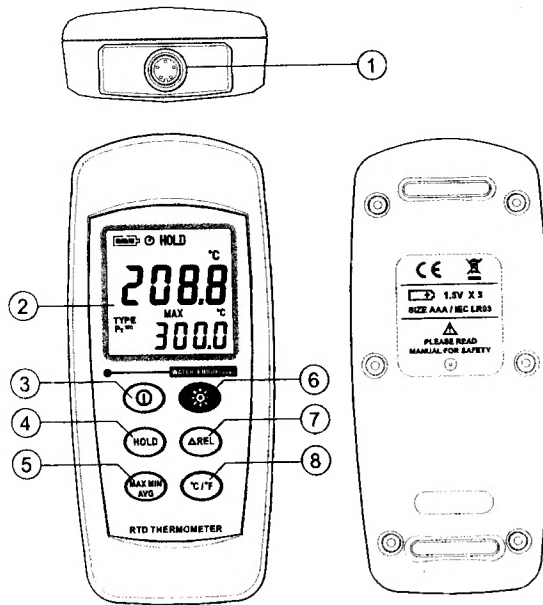
**Power requirement:** Battery 1.5V X 3 size AAA

**Battery Life:** Approx. 100hours with alkaline battery

## 3. Symbol Definition and Button Location:



-	: This indicates that the minus temperature is sensed.
°C °F	: Centigrade and Fahrenheit indication.
Pt xxx	: Platinum Type Indication
HOLD	: This indicates that the display data is being hold.
MAX	: The Maximum value is now being displayed
MIN	: The Minimum value is now being displayed
AVG	: The Average value is now being displayed.
ΔREL	: The reading is now under Relative Mode.
	: The Battery power potential indication.
	: This indicates Auto Power Off is enabled.



- ① Pt type temperature sensor connector
- ② LCD display
- ③ Power ON/OFF button
- ④ HOLD button
- ⑤ MAX MIN Average control button
- ⑥ Back light button
- ⑦ Relative readout button
- ⑧ °C, °F control button

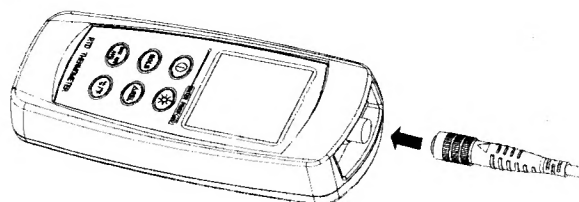
#### 4. Operation Instructions:

##### 4.1 Power-Up

Press the  $\text{\textcircled{1}}$  key to turn the thermometer ON or OFF

##### 4.2 Connection the temperature probe

For measurement, plug the temperature probe into the input connectors.



##### 4.3 Selecting the Temperature Scale

When the meter was first power on, the default scale setting is set at Celsius ( $^{\circ}\text{C}$ ) scale. The user may change it to Fahrenheit ( $^{\circ}\text{F}$ ) by pressing " $^{\circ}\text{C}/^{\circ}\text{F}$ " button and vice versa to Celsius.

##### 4.4 Data-Hold Operation

The user may hold the present reading and keep it on the display by pressing the "HOLD" button. When the hold data is no longer needed, one may release the data-hold operation by pressing "HOLD" button again.

When the meter is under Data Hold operation, the " $\triangle$  REL",  $\text{\textcircled{AVG MAX MIN}}$  and " $^{\circ}\text{C}/^{\circ}\text{F}$ " button are disabled.

##### 4.5 Back light Operation:

Press the "Back Light" button will turn back light on and Press it once again will turn off.


The meter will turn back light off if there is no push "Back Light" button for 10 seconds.




#### 4.6 Relative Operation:


When one press the " $\Delta$ REL" button, the meter will memorize the present reading and the difference between the new reading and the memorized data will be shown on the display. Press the " $\Delta$ REL" button again to exit the Relative operation.


#### 4.7 MAX/MIN/AVG Operation:


When one press the  button the meter will enter the MAX/MIN/AVG mode. Under this mode the maximum value, minimum value and average value of latest 8 data is kept in the memory simultaneously and updated with every new data.


When the MAX symbol is display, the Maximum is shown on the display.


Press  again, then the MIN symbol is on the display and also the minimum reading.

Press  again, the AVG symbol is on the display and also the average reading.

Press  again, MAX, MIN and AVG will blink together. This means that all these data is updated in the memory and the reading is the present temperature.

One may press  to circulate the display mode among these options.

When the meter is under  operation, " $\Delta$ REL" and " $^{\circ}$ C/ $^{\circ}$ F" are disabled.

To exit the MAX/MIN mode, one may press and hold  for two seconds.




#### 4.8 Auto Power Off:

By default, when the meter is powered on, it is under auto power off mode. The meter will power itself off after 30 minutes if no key operation.

One may press and hold "HOLD" button and then power on the meter and there will be two successive beeps to indicate that auto power off is disabled.

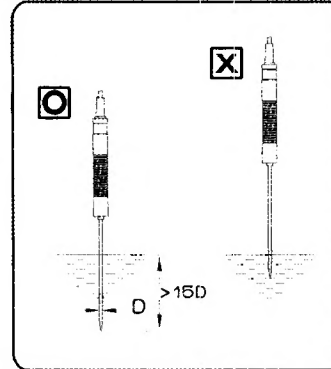
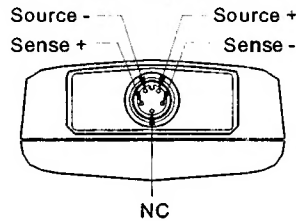
**4.9 Low Battery Condition:**

The temperature meter incorporates visual low battery indication as follows:

	Battery OK, measurements are possible.
	Battery Low, battery needs to be replaced, measurements are still possible.
	Battery exhausted, the battery need to be replaced with new one (size AAA, 1.5V x 3).

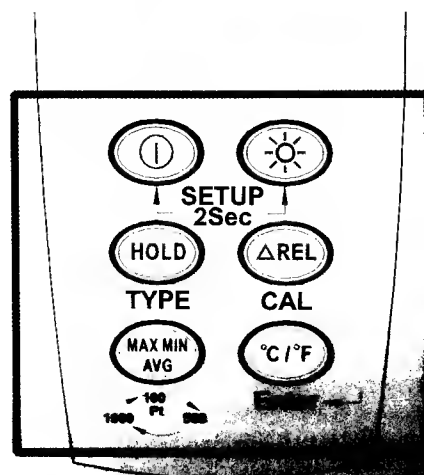
**5. Temperature Measurement****5.1 Correct Measurement Method:**

The temperature sensor is located at the end of the metal sheath of the sheath type TEMPERATURE PROBE. To accurately test internal temperature insert the probe into the item you want to measure to a distance at least 15 times the diameter of the sheath.

**5.2 Connector Configuration:**

## 6. Temperature Meter Calibration Setup

Below table diagram shows each button function when user enter into calibration mode.

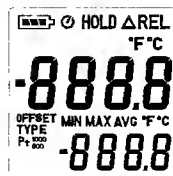


**Note:**

Turn the Power "OFF" before attempting following **SETUP**.

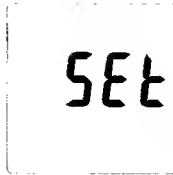
Setup mode is cancelled during below procedure if "POWER" button is pressed.

## 6.1 Pt type selection



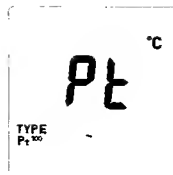
6-1-1.

Press and hold "Power" + "Light" buttons for 2 seconds to enter setup mode.



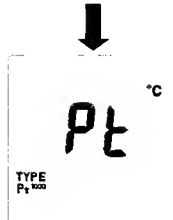
6-1-2.

Press "Hold" button to enter Pt selection mode.



6-1-3.

Press "Max" button to select between Pt probe type.  
(Pt100, Pt500, Pt1000 is circulate)



6-1-4.

Press "°C/°F" button to confirm selection.

## 6.2 0 °C Calibration

-888.8 °C
   
 HOLD ΔREL
   
 TYPE Pt 100



5EL



Pt °C
   
 CAL
   
 TYPE Pt 100



ΔREL °C
   
 CAL
   
 USER
   
 TYPE Pt 100

⚠ Insert temperature probe into 0°C Deg.  
 Standard calibration unit before calibration.  
 Hold the probe until condition is stabilized  
 before starting calibration.

6-2-1.

Press and hold "Power" + "Light" buttons for 2 seconds to enter setup mode.

6-2-2.

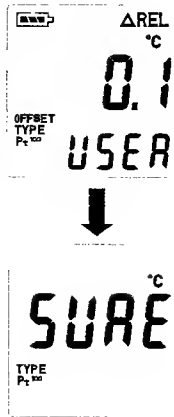
Press "REL" button to enter calibration mode. Enter Pt selection first.

6-2-3.

Press "°C/°F" button to confirm Pt selection

6-2-4.

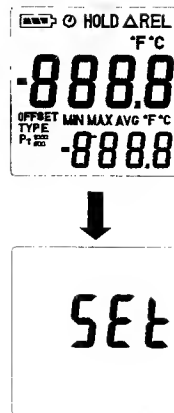
Press "REL" button to enter calibration mode.



6-2-5.  
Press "REL" button to confirm present calibration value.

6-2-6.  
Press "°C/°F" button to confirm selection

### 6.3 Recall Default factory setting value



6-3-1.  
Press and hold "Power" + "Light" buttons for 2 seconds to enter setup mode.

6-3-2.  
Press "REL" button to enter calibration mode. Enter Pt selection first.



6-3-3.  
Press "°C/°F" button to confirm Pt selection



6-3-4.  
Press "Light" button to enter recall mode.



6-3-5.  
Press "°C/°F" button to confirm revert back to "Default factory setting value"



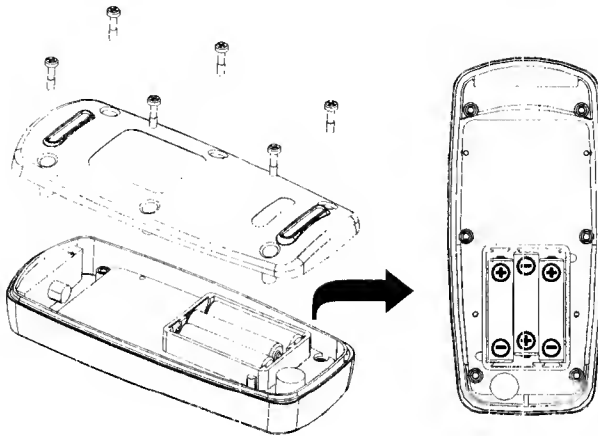
6-3-6.  
Press "°C/°F" button to confirm selection.

## 7. Maintenance

### ■ Replacing the Batteries

- (1) Remove back cover screw to remove cover. Verify polarity and install new LR03(AAA size) alkaline batteries.
- (2) Fit cover properly and tighten screw.

**⚠** The unit's back cover are fitted with rubber rings. After replacing the battery, check that the rubber rings are properly seated before reinstalling the back cover. Improper seating of the rubber rings will compromise the unit's water-resistant structure, and possibly result in damage to the equipment.





### ■ Cleaning

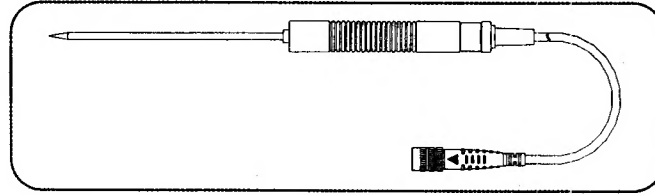
In order to ensure the accuracy of the thermometer for a longer period of time you should calibrate it once a year.

Clean the device and the window of the display with a clean, lint-free, antistatic and dry cleaning cloth.

**⚠ Do not use cleaning agents that contain carbon or benzenes, alcohol or anything similar to clean the product since these substances damage the surface of the measuring instrument. Moreover, these fumes are hazardous to health and explosive. Do not use tools with sharp edges, screwdrivers, metal brushes or anything similar to clean the device.**

## 8. Temperature Probe

### 8.1 Piercing type temperature probe



### 8.2 Piercing type temperature probe Specification

Sensor Type	Platinum resistance thermometer sensor Pt 100(4 wires)
Accuracy	IEC751, class A $\pm 0.15^{\circ}\text{C} \pm 0.002t$ (t: measurement temperature)
Measurement Range	-100 to 400°C
Temperature Sensor Dimensions	Approx. $\varnothing 3.2\text{mm}$ ( $\varnothing 0.125''$ )
Temperature Sensor Length	Approx. 120 mm(4.72")
Cable Length	Approx. 1100 mm(43.3")
Water-resistant	EN60529:1991 IP67

## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence. The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR NON-WARRANTY REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This efforts our customers the latest in technology and engineering. OMEGA is a registered trademark of OMEGA ENGINEERING, INC.

© Copyright 2006 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without the prior written consent of OMEGA ENGINEERING, INC.

**Where Do I Find Everything I Need for  
Process Measurement and Control?  
OMEGA...Of Course!  
Shop online at [omega.com](http://omega.com)**

**TEMPERATURE**

- ☒ Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- ☒ Wire: Thermocouple, RTD & Thermistor
- ☒ Calibrators & Ice Point References
- ☒ Recorders, Controllers & Process Monitors
- ☒ Infrared Pyrometers

**PRESSURE, STRAIN AND FORCE**

- ☒ Transducers & Strain Gages
- ☒ Load Cells & Pressure Gages
- ☒ Displacement Transducers
- ☒ Instrumentation & Accessories

**FLOW/LEVEL**

- ☒ Rotameters, Gas Mass Flowmeters & Flow Computers
- ☒ Air Velocity Indicators
- ☒ Turbine/Paddlewheel Systems
- ☒ Totalizers & Batch Controllers

**pH/CONDUCTIVITY**

- ☒ pH Electrodes, Testers & Accessories
- ☒ Benchtop/Laboratory Meters
- ☒ Controllers, Calibrators, Simulators & Pumps
- ☒ Industrial pH & Conductivity Equipment

**DATA ACQUISITION**

- ☒ Data Acquisition & Engineering Software
- ☒ Communications-Based Acquisition Systems
- ☒ Plug-in Cards for Apple, IBM & Compatibles
- ☒ Datalogging Systems
- ☒ Recorders, Printers & Plotters

**HEATERS**

- ☒ Heating Cable
- ☒ Cartridge & Strip Heaters
- ☒ Immersion & Band Heaters
- ☒ Flexible Heaters
- ☒ Laboratory Heaters

**ENVIRONMENTAL  
MONITORING AND CONTROL**

- ☒ Metering & Control Instrumentation
- ☒ Refractometers
- ☒ Pumps & Tubing
- ☒ Air, Soil & Water Monitors
- ☒ Industrial Water & Wastewater Treatment
- ☒ pH, Conductivity & Dissolved Oxygen Instruments